

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. :

U.S. National Serial No. :

Filed :

PCT International Application No. : PCT/EP2004/013219

VERIFICATION OF A TRANSLATION

I, Susan ANTHONY BA, ACIS,

Director of RWS Group Ltd, of Europa House, Marsham Way, Gerrards Cross, Buckinghamshire, England declare:

That the translator responsible for the attached translation is knowledgeable in the German language in which the below identified international application was filed, and that, to the best of RWS Group Ltd knowledge and belief, the English translation of the amended sheets of the international application No. PCT/EP2004/013219 is a true and complete translation of the amended sheets of the above identified international application as filed.

I hereby declare that all the statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the patent application issued thereon.

Date: May 4, 2006

Signature :



For and on behalf of RWS Group Ltd

Post Office Address :

Europa House, Marsham Way,
Gerrards Cross, Buckinghamshire,
England.

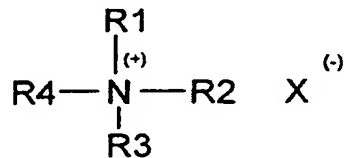
AMG185WO/OZ1238WO

EP0413219

08.9.2005

Claims

1. An antibacterial additive for melamine resins,
 particularly for melamine-formaldehyde or
 5 melamine/urea-formaldehyde resins, with at least one
 borate salt from the group of the salts of orthoboric
 acid H_3BO_3 and/or of metaboric acid HBO_2 and/or of
 polyboric acids $H_{n-2}B_nO_{2n-1}$ as active antibacterial
 compound and at least one quaternary ammonium compound
 10 of the formula



with $R_1, R_2, R_3 = C_1-C_5$ alkyl, $R_4 = C_1-C_{20}$ alkyl or
 benzyl, it being possible for R_1, R_2, R_3 and R_4 to be
 identical or different, and $X =$ chloride or bromide,

15 characterized by

at least one borate salt of the formula $Zn_aB_bO_c \cdot dH_2O$
 with $a = 1$ or 2 , $b = 1$ to 8 ; $c = 1$ to 13 and $d = 0$ to
 20 10.

2. The antibacterial additive for melamine resins of
 claim 1, **characterized** in that the melamine resins are
 formed by condensation of melamine or of mixtures of
 25 urea with melamine with aldehydes or mixtures of
 aldehydes such as, for example, formaldehyde, acet-
 aldehyde, trimethylolacetaldehyde, acrolein,
 benzaldehyde, furfural, glyoxal, glutaraldehyde,
 phthalaldehyde, terephthalaldehyde, isobutyraldehyde,
 30 acetone or ketones such as, for example, methyl ethyl
 ketone and diethyl ketone.

3. The antibacterial additive for melamine resins of claim 1 or 2, **characterized** in that the melamine resins are etherified by reaction with C₁-C₄ alcohols and/or etherified and subsequently transesterified with C₄-C₁₈
5 alcohols and/or diols and/or etherified and partly reacted with bisepoxides.

4. The antibacterial additive for melamine resins of any one of the preceding claims, **characterized** by at least one further borate salt of the formula

5 $M_a B_b O_c \cdot d H_2O$ and/or

$M_a N_a B_b O_c \cdot d H_2O$, where

$a, a' = 1$ or 2

$b = 1$ to 8

$c = 1$ to 13

10 $d = 0$ to 10

$M, N = NH_4, Na, K, Li, Ca, Mg$ and where

M, N, a and a' may be identical or different.

5. The antibacterial additive of at least one of the
15 aforementioned claims, **characterized** in that at least one further borate salt is $Na_2B_4O_7 \cdot dH_2O$ where $d = 0, 5$ or 10 ; $NaBO_2 \cdot dH_2O$ where $d = 2$ or 4 ; $NaB_5O_8 \cdot 5H_2O$; $Na_2B_8O_{13} \cdot 4H_2O$; $Ca_2B_6O_{11} \cdot 5H_2O$; $NaCaB_5O_9 \cdot dH_2O$ where $d = 5$ or 8 ; $LiBO_2 \cdot 8 H_2O$; $LiB_5O_8 \cdot 5H_2O$; $Li_2B_4O_7 \cdot 3H_2O$; $K_2B_4O_7 \cdot 4H_2O$;
20 $KB_5O_8 \cdot 4H_2O$; $NH_4B_5O_8 \cdot 4H_2O$; $(NH_4)_2B_4O_7 \cdot 4H_2O \cdot 4H_2O$;
 $Zn_2B_6O_{11} \cdot dH_2O$ where $d = 3.5, 7-7.5, 9$ and/or $ZnB_2O_4 \cdot 2H_2O$.

6. The antibacterial additive of at least one of the preceding claims, **characterized** in that at least one
25 borate salt is technical zinc borate $ZnO \cdot B_2O_3 \cdot dH_2O$ with $\geq 45\%$ by weight ZnO and $\geq 36\%$ by weight B_2O_3 .

7. The antibacterial additive of at least one of the preceding claims, **characterized** in that at least one
30 further borate salt is technical sodium borate $Na_2O \cdot B_2O_3 \cdot 10 H_2O$.

8. The antibacterial additive of at least one of the preceding claims, **characterized** in that as sole borate salt it has technical zinc borate $\text{ZnO} * \text{B}_2\text{O}_3 * d\text{H}_2\text{O}$.

5 9. The antibacterial additive of at least one of claims 6 to 8, **characterized** in that the amount of borate salt is 0.1% to 3% by weight, based on the amount of solid melamine resin.

10 10. The antibacterial additive of at least one of claims 6 to 8, **characterized** in that the amount of borate salt is 1% to 2.5% by weight, based on the amount of solid melamine resin.

15 11. The antibacterial additive of at least one of claims 6 to 8, **characterized** in that the amount of borate salt is 1.8% to 2.2% by weight, based on the amount of solid melamine resin.

20 12. The antibacterial additive of at least one of the preceding claims, **characterized** in that at least one quaternary ammonium compound is benzalkonium chloride.

25 13. The antibacterial additive of claim 12, **characterized** in that it has technical zinc borate $\text{ZnO} * \text{B}_2\text{O}_3 * d\text{H}_2\text{O}$ and benzalkonium chloride in a weight ratio of 2:1.

30 14. The antibacterial additive of claim 13, **characterized** in that the amount of technical zinc borate and benzalkonium chloride is 0.1% to 1% by weight, based on the amount of solid melamine resin.

35 15. The antibacterial additive of claim 13, **characterized** in that the amount of technical zinc

borate and benzalkonium chloride is 0.2% to 0.6% by weight, based on the amount of solid melamine resin.

16. The antibacterial additive of claim 12,
5 **characterized** in that it has technical zinc borate
ZnO * B₂O₃ * dH₂O and technical sodium borate

$\text{Na}_2\text{O} * \text{B}_2\text{O}_3 * d\text{H}_2\text{O}$ with $d = 10$ and benzalkonium chloride in a weight ratio of 2:2:1.

17. The antibacterial additive of claim 16,
5 **characterized** in that the amount of technical zinc borate and technical sodium borate and benzalkonium chloride is 0.1% to 1% by weight, based on the amount of solid melamine resin.
- 10 18. The antibacterial additive of claim 16, **characterized** in that the amount of technical zinc borate and technical sodium borate and benzalkonium chloride is 0.2% to 0.6% by weight, based on the amount of solid melamine resin.
- 15 19. An antibacterial melamine resin comprising an antibacterial additive of at least one of the preceding claims.
- 20 20. A process for producing an antibacterial melamine resin of claim 19, **characterized** in that an antibacterial additive of any one of claims 1 to 18 is mixed with a melamine resin present in dissolved form, the additive being admixed to the melamine resin in
25 solid and/or liquid form to give an antibacterial melamine resin in suspended form which subsequently, directly or following conversion into a solid resin, is processed further at a later point in time.
- 30 21. The process of claim 20, **characterized** in that the antibacterial additive is admixed during the melamine resin synthesis after the melamine resin precondensate obtained in the melamine resin synthesis has cooled.
- 35 22. The process of claim 20, **characterized** in that the antibacterial additive is admixed after the melamine

resin synthesis, the admixing taking place to a melamine resin present in dissolved form as a liquid resin, or, where a solid resin is present, the admixing taking place after the solid resin has been converted
5 into the dissolved form.

23. The process of any one of claims 20 to 22, **characterized** in that the borate salt present in the additive is mixed with the melamine resin together with
10 and/or after and/or before the quaternary ammonium compound.

24. An antibacterial laminate comprising an antibacterial melamine resin of claim 19.
15

25. A process for producing an antibacterial laminate of claim 24, **characterized** in that
a. a dry absorbent sheetlike structure is impregnated with the antibacterial melamine resin present in
20 dissolved form,
b. the antibacterial sheetlike structure thus obtained is dried, and
c. the dried antibacterial sheetlike structure is pressed with one or more resin-impregnated interlayers
25 or with a support material, to form a laminate, and is fully cured.

26. The process of claim 25, **characterized** in that the melamine resin comprises further additives such as, for
30 example, wetting agents or release agents, plasticizers and curing agents and also other customary additions.

27. The use of an antibacterial laminate of claim 24 for surfaces and floors.